Summary of Charbert Hydrogen Sulfide Data – June 28 - July 7, 2004

The Rhode Island Department of Environmental Management (RI DEM) is currently operating two continuous hydrogen sulfide monitors in the neighborhood adjacent to the Charbert facility in Alton. The monitors are located in sheds on the properties of 10 Woodville-Alton Road, across Alton Pond from the facility, and 16 River Street, adjacent to the Charbert lagoons

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As in the previous three weeks, substantially elevated levels of hydrogen sulfide were recorded frequently during the period of June 28th to July 7th at the River Street location. On all of the nine nights during that period, the concentrations were elevated during all or part of the late night- early morning hours. In addition, elevated concentrations occurred intermittently throughout the day on Monday, July 5th at the River Street site. At all times that elevated concentrations were observed, the wind conditions were either calm or from the south, the direction of the lagoons. Concentrations were lower at the Woodville-Alton Road location than at River Street, but were sporadically higher at that location than in previous weeks. Specifically:

- Hydrogen sulfide levels on River Street were elevated from 12:00 to 5:30 AM on Tuesday, June 29th. The highest 10-minute reading during that period, recorded at 12:35 AM, was 25 ppb and the highest one-hour average concentration was 22 ppb. Concentrations at the Woodville-Alton Road location were not elevated that morning.

- Hydrogen sulfide levels at the River Street monitor were elevated from 12:25 to 4:35 AM and 6:30 to 8:15 AM on Wednesday, June 30th. The highest ten-minute average, recorded at 1:45 AM, was 71 ppb and the highest one-hour average was 51 ppb. Concentrations at the Woodville-Alton Road location were 15 – 23 ppb from 6:55 to 7:20 AM that morning; the highest one-hour concentration at that location was 14 ppb.

- Hydrogen sulfide levels on River Street were above 10 ppb from 12:20 to 8:35 AM on Thursday, July 1st. The highest reading recorded during that period was 68 ppb, recorded at 5:55 AM and the highest one-hour average concentration was 61 ppb. Concentrations at the Woodville-Alton Road location were elevated (concentrations of 29 – 39 ppb) from 7:50 to 8:30 AM on that morning, with a maximum one-hour concentration of 28 ppb.

- On Thursday, July 1st, hydrogen sulfide concentrations at the River Street location were above 10 ppb intermittently between 9:45 and 10:25 PM. Concentrations at that location were also elevated between 6:20 and 7:30 AM and at 10:05 AM on the

morning of Friday, July 2nd. The highest reading during those periods was 32 ppb at 6:35 AM and the highest one-hour average concentration was 28 ppb. Concentrations at the Woodville-Alton location were not elevated during that period.

- Hydrogen sulfide levels frequently were elevated at the River Street monitor between 10:39 PM on Friday, July 2nd and 7:40 AM on Saturday, July 3rd. The highest concentration during that period was 42 ppb at 2:30 AM on the 3rd and the highest one-hour average concentration was 34 ppb. Concentrations were also sporadically elevated during that period at the Woodville-Alton monitor; the highest concentration recorded at that monitor was 36 ppb at 11:35 PM on the 2nd and the highest one-hour concentration was 21 ppb.

- Hydrogen sulfide levels were elevated at the River Street monitor from 10:05 PM on Saturday, July 3rd to 7:50 AM on Sunday, July 4th. The highest concentration during that period was 90 ppb at 6:55 AM on the 4th and the highest one-hour average concentration was 78 ppb. Note that 90 ppb is the upper end of the range of concentrations that can be measured by the instrument in its current configuration, so the concentration for that 10-minute period may actually have been above 90 ppb. All other concentrations were below 90 ppb. Concentrations during that period were less than 10 ppb at the Woodville-Alton monitor.

- Concentrations at the River Street monitor were elevated between 10:30 PM on Sunday, July 4th and 2:30 AM on Monday, July 5th. The highest concentration during that period was 34 ppb at 12:00 AM and the highest one-hour concentration was also 34 ppb. Concentrations were not elevated at the Woodville-Alton location.

- Concentrations on River Street were elevated intermittently throughout the day on Monday July 5th, beginning at 7:20 AM and continuing through 6:10 AM on Tuesday, July 6th. The highest concentration during that period, 58 ppb, was recorded at 11:50 AM on the 5th; the highest one-hour concentration was 37 ppb. Concentrations at the Woodville-Alton monitor were below 10 ppb throughout this period except for a reading of 13 ppb at 10:30 AM on the 5th and a reading of 19 ppb at 12:50 AM on the 6th.

- Concentrations at both monitoring locations were below 10 ppb during the night of Tuesday, July 6th and the morning hours of Wednesday, July 7th except for a reading of 15 ppb at 9:50 PM on the 6th and a reading of 10 ppb from 4:55 – 5:20 AM on the 7th, both at the River Street location.

In summary, elevated hydrogen sulfide levels occurred at the River Street location during the late night to early morning hours of all nine nights between June 28th and July 7th and intermittently during most of the day on Monday, July 5th. Levels were similar to those seen in the previous week. Stagnant wind conditions or southerly winds were present at all times that the levels were elevated. Concentrations were lower at the Woodville-Alton Road monitor than at the River Street location but were, for short intervals, higher than in previous weeks.

As in the previous week, one reading at the River Street monitor was at or above 90 ppb, the upper end of the range of concentrations that can be measured with the instrumentation in its current configuration. RI DEM is currently obtaining supplies necessary to configure a monitor to measure higher hydrogen sulfide levels. When those supplies are available, RI DEM plans to operate two monitors side by side at the River Street location, the current monitor measuring the lower range and an additional monitor that would be able to quantify higher concentrations should they occur.

Table A shows the maximum 10-minute, one-hour and 24-hour average concentrations (in ppb) measured by each monitor during the latest and previous monitoring periods.

Table A Maximum Hydrogen Sulfide Levels

Monitor	Date	Maximum 10-minute Level	Maximum 1-hour Level (HEALTH nuisance range is >2 - <100 ppb)	Maximum 24-hour Level (HEALTH nuisance range is >2 - < 30 ppb)
River Street	6/7– 6/14/04	78 ppb	49 ppb	7 ppb
	6/15 – 6/21/04	44 ppb	29 ppb	7 ppb
	6/21 – 6/28/04	90 ppb	79 ppb	15 ppb
	6/28 – 7/7/04	90 ppb	78 ppb	16 ppb
Woodville-Alton Rd	5/13 – 6/7/04	6 ppb	2 ppb	0.2 ppb
	6/6 – 6/14/04	27 ppb	19 ppb	3 ppb
	6/15 – 6/21/04	10 ppb	5 ppb	1 ppb
	6/22 – 6/28/04	16 ppb	13 ppb	2 ppb
	6/28 – 7/7/04	39 ppb	28 ppb	2 ppb

The maximum levels recorded by the River Street monitor during the June 28th to July 7th period are similar to those in the previous week and are well into the range of values that are classified as nuisance levels by the Rhode Island Department of Health (HEALTH). These levels would clearly be associated with a noticeable rotten-egg type odor. HEALTH warns that people exposed to nuisance levels of hydrogen sulfide may experience nausea and stress from the odors, an increase in non-specific symptoms and a possible exacerbation of chronic respiratory symptoms in hypersensitive individuals. The maximum concentrations at the Woodville-Alton Road location were higher than in previous weeks and were also in the nuisance range.

Hydrogen sulfide monitoring is continuing at the two locations. For more information about sampling results, contact Barbara Morin at 222-4700, ext. 7012.